

LVII.—*Descriptions and Records of Bees.*—LXX.

By T. D. A. COCKERELL, University of Colorado.

*Melissodes robustior*, sp. n.

♀.—Length about 13 mm., anterior wing 10 mm.

Robust, black, with the pubescence mainly light ochraceous, but a moderate amount of black on vertex; mesothorax with a large patch of black hair on disc posteriorly, not approaching sides; anterior part of scutellum with much black hair; tegulæ with light hair in front and black about middle; hair on apical part of anterior and middle tibiæ externally sooty; anterior and middle tarsi and inner side of hind tarsi with dark brown hair; scopa of hind legs very large, collecting a great amount of sunflower pollen; hind margins of abdominal segments dark, only the first narrowly subhyaline; abdominal bands very pale ochraceous, no well-defined basal band on second segment, and the middle one more or less interrupted in middle; fifth and sixth segments with black hair, fifth with long pale hair at sides; venter with reddish hair. Head broad, facial quadrangle broader than long; antennæ black, the flagellum marked with dull red beneath; tegulæ black or rufo-piceous. Wings dusky, nervures fuscous; disc of mesothorax shining, with distinct well-separated punctures; spurs very pale yellowish.

♂.—Length about 11 mm., flagellum 7 mm.

Pubescence pale ochraceous, with a little black on disc of mesothorax and scutellum; mandibles black; labrum with a round cream-coloured spot; clypeus bright lemon-yellow; flagellum bright ferruginous beneath; third antennal joint longer than broad; tegulæ with ochreous hair. Wings dusky, nervures fuscous, the basal nervure ferruginous. Hind margins of abdominal segments broadly reddish subhyaline; hair on inner side of hind tarsi ferruginous.

*Hab.* Berkeley, California; females at flowers of cultivated *Helianthus annuus*, the type, Aug. 9, 1915. The male, which possibly represents a distinct species, was collected at Los Angeles, California, at flowers of *Helianthus lenticularis*, August 1915 (Cockerell). At Orange, California, Aug. 16, I found numerous *Melissodes* visiting *Helianthus lenticularis*, but they were all *M. aurigena*, Cresson.

The female *M. robustior* runs in my tables in Trans. Amer. Ent. Soc., 1906, to *M. grindelicæ*, but is much larger, and is easily distinguished by the black hair of the thorax being separated from the tegulæ by a broad ochraceous band. In

the arrangement of the hair on thorax it is like *M. semiagilis* (Ckll.), but that is a considerably smaller species, and the male is quite different. It is also close to *M. nigrosignata*, Ckll., but the facial quadrangle is broader and shorter, the hairless area on apical part of second abdominal segment is much less, and the abdomen beneath lacks the conspicuous black hair, contrasting with the pale at sides. The male *robustior*, in the same tables, runs to *M. gilensis*, but differs by the broad lemon-yellow clypeus, the yellow nearly reaching the eye; also by the yellow spot on labrum and less elevated vertex. It is easily known from *M. grindelie* by the light hair on tegulæ, very small amount of dark hair on mesothorax, &c. It is also close to *M. helianthophila*, Ckll., but differs by the ochraceous pubescence, dusky wings, darker antennæ, with the third joint twice as long, &c.

*Bombus edwardsii*, var. *kenoyeri*, var. n.

♀.—Like var. *bifarius* (Cresson), but the red colour of abdomen replaced by pale tawny, so that all the light abdominal hair is of the same colour. The second abdominal segment has a broad triangle of black hair at base.

*Hab.* Tolland, Colorado; at flowers of *Frasera stenosepala*, July (L. A. Kenoyer). Also on *Frasera stenosepala*, at Tolland, Mr. Kenoyer took *B. edwardsii bifarius* (Cr.), *B. rufocinctus astragali* (Ckll.), *Psithyrus insularis* (Sm.), *Colletes kincaidii*, Ckll., *Chelynia nitida* (Cr.), *Monumetha albifrons* (Kirby), and *Megachile wootoni calogaster* (Ckll.). *Bombus kirbyellus*, Curtis, was taken by Mr. Kenoyer on Nebraska Hill, Colo., above timber-line, July, at flowers of *Polemonium confertum* and *Trifolium*. At Corona, Colorado, above timber-line, he took *Bombus appositus*, Cr., at flowers of *Trifolium dasy carpum*, and *B. flavifrons* at *Mertensia bakeri*. *B. flavifrons* was also taken on Nebraska Hill at *Trifolium dasy carpum*.

*Osmia kenoyeri*, sp. n.

♂ (type).—Length nearly 11 mm.

Dark green, the head and thorax rather bluish green, the abdomen clear olive-green, the margins of segments colorous; antennæ long, black, the middle joints of flagellum conspicuously swollen beneath; tegulæ piceous, green in front; legs black, without metallic tints; hair of head, thorax, first abdominal segment, and greater part of legs long and white, of second abdominal segment also white, but shorter, of segments 3 to 5 black, of sixth mixed black and

white, a fringe of long white hairs at apex; head broad, quadrate, finely and very densely punctured; mandibles black; mesothorax and scutellum densely punctured; area of metathorax dull and granular. Wings hyaline. Tarsi with red hair on inner side; anterior tarsi with joints 2 to 4 having the anterior apex produced; middle tarsi with basitarsi obcordate, very short, and greatly swollen, very hairy, the hair mostly fuscous; hind basitarsi also broadened, but not so short, the inner margin with a prominent angle beyond the middle, the anterior face shining, not hidden by hair; spurs of hind legs dark, curved at end, not peculiar; small joints of middle and hind tarsi thickened, but not otherwise remarkable. Abdomen shining, sixth segment with a scarcely noticeable trace of an emargination, seventh strongly bidentate; second abdominal segment thickened on the apical middle; third deeply emarginate, the sides of the notch with a short fringe of orange hair.

♀.—Length about 10 mm.

Robust, tegumental colours like those of male, but clypeus and adjacent sides of face blue-black, supraclypeal area green, and face on each side of antennæ steel-blue; mandibles tridentate; clypeus subemarginate; hair of face long and entirely black, of cheeks up to sides of vertex black, but of head and thorax above pale orange-yellow, not mixed with black; middle of mesothorax with well-separated punctures; pleura and metathorax with black hair. Legs black, with black hair, except on anterior tarsi, where it is pale; first abdominal segment with yellowish-white hair, the others with black, the hair quite long and coarse; ventral scopa black.

*Hab.* Nebraska Hill, Colorado, at flowers of *Trifolium*, above timber-line, July 1915 (*L. A. Kenoyer*).

Known from all other North-American species by the structure of the male tarsi. The female may be compared with *O. hendersoni*, Ckll., but the abdomen is quite differently coloured and the sixth segment has not the pale reddish hair-fringe seen in *hendersoni*. The abdomen of *hendersoni* is smoother and less hairy. In Friese's tables of Palæarctic *Osmia* both sexes run near *O. angustula*, but are quite distinct from that species. Also on Nebraska Hill, above timber-line, but not on a flower, Mr. Kenoyer took a male *Osmia abnormis*, Cresson. On Nebraska Hill, at *Salix*, 100 feet below timber-line, Mr. Kenoyer took *Halictus sisymbrii*, Ckll.

*Prosopis personatella*, sp. n.

♀.—Length about 5.5 mm.

Head, thorax, and abdomen entirely black, without light markings; flagellum dull ferruginous beneath; head broad; front and vertex dull and very finely punctured, but region behind tips of eyes shining; mesothorax dullish, extremely minutely and closely punctured; scutellum broad and flat, shining, the punctures distinctly separated; metathorax dull, the area roughened; tegulæ black. Wings very ample, clear hyaline, nervures and stigma piceous; second s.m. large and long. Legs black, the hind tibiæ with rather more than the basal fourth cream-coloured. Abdomen shining, first segment with very minute, widely separated punctures, second microscopically lineolate. Under the compound microscope the base of metathorax appears cancellate.

*Hab.* Corona, Colorado, above timber-line, at flowers of *Erigeron pinnatisectus*, July (*L. A. Kenoyer*).

Readily known by the entirely black face, combined with the rather small size and ordinary antennæ. It has some superficial resemblance to the smaller *P. sanicula*, Rob. At the same place and flowers Mr. Kenoyer took a male which I referred to *P. coloradensis*, Ckll., for, although it looks a little different from typical specimens of that species, there is nothing tangible on which to separate it. The female described above differs from *coloradensis* (*tuertonis*, Ckll.) not only by its black face, but also by the long second s.m. The mesothorax of *tuertonis* is much more deeply and strongly punctured. It therefore seems that we have to do with a distinct species, not a variety of *coloradensis*, and that the male *coloradensis* is not conspecific.

*Prosopis varifrons*, Cresson.

Females from Florissant and Boulder, Colorado, are recognizable by their relatively large size; lateral face-marks ending about the level of antennæ, where they are very obliquely truncate (approaching the form of those in the male); first abdominal segment very smooth and shining, second finely and distinctly punctured, in complete contrast. Metz (*Trans. Am. Ent. Soc.* xxxvii. pl. ix. fig. 130) figures as female *varifrons* an unusual variety or some other species. *P. subtristis*, Swenk. & Ckll., appears to be a race of *varifrons*, as was suggested in the original description. Metz, who makes *subtristis* a variety of *P. episcopalis*, Ckll.,

remarks that some of the species cannot be distinguished from *P. varifrons*. The male which Metz refers to *P. subtristis*, of which I have an example determined by Metz (Owensby County, Nevada, July, *Baker*), is quite distinct, and is really related to *P. episcopalis*, having the yellow markings reduced and the lateral face-marks much narrower above. It is *P. universitatis*, Ckll., which Metz remarks "is probably the variety *subtristis*."

*Prosopis luzonica*, Cockerell.

♂.—Length about 7 mm.

Black, with broad transverse mark on lower margin of clypeus, lateral face-marks (rather narrow, notched at antennal sockets, and ending narrowly on orbital margin below level of middle of front), interrupted line on prothorax, spots on tubercles and tegulae, anterior tibiae in front, middle tibiae at extreme base, rather more than basal third of hind tibiae, and all the basitarsi yellow; flagellum long, the apical part ferruginous beneath.

*Hab.* Mt. Banahao, Philippine Is. (*Baker* coll. 3664).

The species was described from a female.

*Prosopis mindanensis*, sp. n.

♂.—Length about 6.5 mm.

Black, with a large triangular mark on lower part of clypeus, lateral face-marks (shaped like feet on tip-toe, broadly truncate at about level of middle of supra-clypeal area, but continued narrowly a short distance up orbital margin), small stripe on scape, interrupted line on prothorax, tubercles, spot on tegulae, anterior tibiae in front, and bases of middle and hind tibiae yellow; anterior tarsi ferruginous, the small joints dusky, the other tarsi black; face rather long and narrow; antennae short for a male, reaching about to level of tubercles, third and fourth joints very short, flagellum obscure reddish beneath; mesothorax rather strongly and extremely densely punctured; area of metathorax coarsely wrinkled. Wings greyish hyaline; first r.n. meeting first t.-c.; second s.m. longer than high; first abdominal segment shining, with extremely fine punctures; the other segments also very finely punctured, without any distinct hair-bands or patches; stipites long and spine-like.

*Hab.* Dapitan, Mindanao (*Baker* coll. 3663).

Resembles *P. palavanica*, Ckll., but is distinguished by the shorter antennae, yellow bases of middle and hind tibiae, broader abdomen, &c. Among the continental Asiatic species it is related to *P. feai*, Vachal.

*Apis indica nigrocincta* (Smith).

Dapitan, Mindanao (Baker coll. 3660).

This agrees with a Chinese specimen from Smith's collection.

*Xylocopa fuliginata*, Pérez.

A new locality is Mt. Makiling, Luzon (Baker coll. 5233).

*Mesotrichia bombiformis* (Smith).

Baguio, Benguet (Baker coll. 4995). From the same locality comes a female *Xylocopa fuliginata* (Baker coll. 4994).

*Nomioides valdezi*, sp. n.

♂.—Length about 4 mm.

Head and thorax dark steel-blue, abdomen black; clypeus, labrum, end of mandibles, broad but short stripe on scape, tubercles (with extension on sides of prothoracic margin), knees (the anterior broadly), tibiae (except large dark mark on hind pair), and tarsi yellow; abdomen with rather narrow interrupted yellow bands at bases of second and third segments; front dull; mesothorax and scutellum brilliantly shining. Wings hyaline, nervures and stigma dilute sepia, second s.m. very small.

Variety *a*.—Abdomen with interrupted band only on third segment, and this may be nearly obsolete.

*Hab.* Cagayan, Mindanao (Baker coll. 3670).

Named after Julian Valdez, Professor Baker's collector. Very close to the Australian *N. perditellus*, Ckll., but differs by the much broader head, base of mandibles black, and much darker flagellum. The third antennal joint is not about twice as broad as long, as it is in male *perditellus*. The wings are not clear white, as they are in the European *N. variegatus* (Oliv.).

*Nomioides melanogaster*, sp. n.

♂.—Length 4.5–5.5 mm.

Head and thorax steel-blue; abdomen broad, black, without markings, the first segment variably bluish; clypeus (except two rather large black spots), labrum, most of apical half of mandibles, margin of tubercles, knees, anterior tibiae in front, and all the tarsi yellow; head broad; clypeus small, sparsely punctured; antennae long, flagellum dark, very obscurely brownish beneath; sides of face greenish; front blackish,

entirely dull; mesothorax and scutellum smooth and shining; area of metathorax large, dull, and granular, with the apical margin shining; tegulæ dark brown. Wings hyaline, stigma and nervures dilute brown. Abdomen shining.

*Hab.* Dapitan, Mindanao (Baker coll. 3162).

Allied to *N. valdezi*, but easily known by the larger size, dark tibiæ, &c.

*Megachile albobarbata*, sp. n.

♂.—Length about 9 mm.

Black, the head and thorax with black and white hair; abdomen densely covered dorsally with bright red (colour of red lead) tomentum, except the basal part of first segment (which is bare) and the caudal keel (which is broadly rounded, slightly emarginate in middle); head broad; clypeus shining, strongly punctured, the lower margin heavily and regularly fringed with white hair; under side of head with long white hair; sides of face with black hair, white hair between antennæ, black hair on vertex and sides and upper part of front; region behind ocelli broad, shining, with scattered large punctures; antennæ very long and slender, black; mesothorax shining, with well-separated distinct punctures; scutellum coarsely and more closely punctured; area of metathorax with a series of fine plicæ forming a transverse line near the base; dorsum of thorax with thin black hair, but anteriorly and posteriorly and on sides it is white; hind corners of mesothorax tufted with white hair; tegulæ black. Wings fuliginous. Anterior coxæ spined; anterior tarsi simple; hind tarsi long; hair of legs pale.

*Hab.* Dapitan, Mindanao (Baker coll. 3673).

Allied to *M. mystacca* (Fb.) from Australia, but smaller and with different sculpture. There is a general resemblance to *M. malayana*, Cameron.

*Halictus taclobanensis*, sp. n.

♀.—Length nearly 6 mm.

Robust, golden green; pubescence scanty, tinged with ochreous, that at apex of abdomen warm pale ochreous; mandibles broadly red in middle; basal half of the slender scape red, antennæ otherwise dark, the flagellum reddish at tip; basal part of legs green, but knees, tibiæ, and tarsi bright ferruginous, the hind basitarsi with a dusky stain; tegulæ pale testaceous. Wings clear hyaline, nervures and stigma dilute reddish, outer r. n. and t.-c. very weak, first r. n. meeting second t.-c; third s.m. narrow (short), smaller than

second. Head broad, brassy green, densely rugoso-punctate, the clypeus with strong separate punctures; mesothorax golden-green, very densely punctured; scutellum blue-green, polished, the punctures small and weak; area of metathorax golden-green, very coarsely irregularly reticulate. Abdomen golden-green, smooth and polished, without distinct punctures, hind margins of segments not darkened; venter with a long curled scopæ on second and third segments; hind spur much shorter than its mate, and furnished with three long blunt spines and a rounded lobe beyond.

*Hab.* Tacloban, Leyte, Philippine Is. (Baker coll. 3672).

Resembles *H. testaceipes*, Friese, from Java, but the abdominal segments are not dark-bordered, the femora are less red, &c.

*Sphecodes bakeri*, sp. n.

♀.—Length 7.5 mm.

Black, with the abdomen red, the apical part more or less dusky, but not black; small joints of tarsi obscure reddish; head much broader than long, eyes very prominent; mandibles falciform, bidentate, the apical part obscure red; clypeus densely punctured; antennæ black, third joint very short; mesothorax coarsely and extremely densely punctured; area of metathorax coarsely ridged, divided into two rows of large shining hollows, with a transverse ridge between them; hair of head, thorax, and legs white; tegulæ piceous, with a hyaline spot. Wings dilute fuliginous; second s.m. very high and narrow, receiving first r. n. a little before its end. Abdomen shining, impunctate; apex dark.

*Hab.* Dapitan, Mindanao (Baker coll. 3662).

Distinct from the species described from Java by the black legs and red abdomen; not very close to the species of India or Formosa. Genus new to Philippine Islands.

LVIII.—*Rhynchotal Notes*.—LVII. By W. L. DISTANT.

HOMOPTERA.

Fam. Membracidæ (continued from p. 328).

Division GARGARARIA.

*Gargara addahensis*, sp. n.

Head, pronotum, and body beneath black; femora black, their apices and the tibiæ and tarsi testaceous; tegmina